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the spindle. The process just described will, I believe, partially eliminate this difficulty, as the red is somewhat translucent and each chromosome seems to stand out by itself, even when one lies above the other. Mature pollen of *Lilium tigrinum* Ker. when fixed in Flemming and embedded and sectioned in the usual manner reacts to the process as follows: outer wall, sculpturing, etc. (perine), bright red; extine, intine and cytoplasmic structures blue or bluish green; chromatin granules and nucleoli in "resting" nuclei, red; other nuclear material blue; nuclei as a whole well differentiated from surrounding cytoplasm.

ORLAND E. WHITE

BROOKLYN BOTANIC GARDEN,
January 31, 1914

THE AMERICAN MATHEMATICAL SOCIETY

THE society held two large meetings during the Christmas holidays, one at the University of Chicago on December 26-27, the other at Columbia University on December 30-31. The New York meeting was the annual meeting of the society, and was especially marked as the occasion of the presidential address of Professor H. B. Fine, on "An Unpublished Theorem of Kronecker Respecting Numerical Equations."

Eighty members attended the four sessions. Professors W. F. Osgood and H. B. Fine occupied the chair in succession. The following new members were elected: Professor Pierre Boutroux, Princeton University; Mr. E. H. Clarke, Purdue University; Dr. W. H. Cramblet, University of Rochester; Mr. H. J. Ettlinger, University of Texas; Professor W. S. Franklin, Lehigh University; Mr. H. Galajikian, Princeton University; Professor W. W. Hart, University of Wisconsin; Mr. Barnum Libby, University of Michigan; Mr. G. W. Mullins, Columbia University; Mr. J. A. Northcott, Columbia University; Dr. Mildred L. Sanderson, University of Wisconsin; Mr. J. M. Stetson, Princeton University. Nine applications for membership were received. The total membership of the society is now 710, including 66 life members.

The Treasurer's report shows a balance of \$9,153.58. Sales of publications during the year have amounted to \$2,111.45. The library has increased to 4,902 volumes. The number of papers read at all meetings was 240.

At the annual election the following officers and members of the council were chosen:

Vice-presidents: L. P. Eisenhart and E. J. Wilczynski.

Secretary: F. N. Cole.

Treasurer: J. H. Tanner.

Librarian: D. E. Smith.

Committee of Publication: F. N. Cole, Virgil Snyder, J. W. Young.

Members of the Council to serve until December, 1916: C. N. Haskins, L. M. Hoskins, E. V. Huntington, H. L. Rietz.

The annual dinner, on Tuesday evening, was attended by forty-seven members.

The Madison Colloquium Lectures, delivered last September by Professors L. E. Dickson and W. F. Osgood, are now in press and will soon be published by the society.

The following papers were read at the annual meeting:

L. L. Dines: "Complete existential theory of Sheffer's postulates for Boolean algebras."

Arnold Emch: "Two convergency proofs."

J. L. Coolidge: "Congruences and complexes of circles."

Dunham Jackson: "On the degree of convergence of Sturm-Liouville series."

Virgil Snyder: "Birational transformations of the cubic variety in four-dimensional space."

Miss A. H. Tappan: "Plane sextic curves invariant under a group of linear transformations" (preliminary communication).

C. L. Bouton: "Explicit formulas for the inverse of an analytic transformation in n variables."

Edward Kasner: "The classification of conformal transformations."

L. B. Robinson: "Questions of logic arising from the study of systems of partial differential equations" (preliminary report).

Pierre Boutroux: "On a family of rational differential equations of the first order."

H. B. Fine, presidential address: "An unpublished theorem of Kronecker respecting numerical equations."

W. A. Hurwitz: "Note on the Fredholm determinant."

G. D. Birkhoff: "The restricted problem of three bodies."

E. V. Huntington: "On the accuracy of the contracted form of Horner's method."

O. E. Glenn: "On an analogy between formal modular invariants and the class of algebraical invariants called Booleans."

G. C. Evans: "Green's functions for linear partial differential equations of the second order, and Green's theorem."

W. R. Longley: "An existence theorem for a certain differential equation of the n th order."

W. C. Graustein: "The real congruence of complex points, planes, lines."

H. W. Reddick: "Conformal invariants of orthogonal curve nets" (preliminary communication).

W. F. Osgood: "Liouville's theorem concerning periodic functions of several variables."

L. M. Kells: "A complete characterization of dynamical trajectories in n -space."

W. H. Cramblet: "A classification of discontinuous functions and some allied problems."

J. K. Lamond: "Note on the reduction of multiple L -integrals to iterated L -integrals."

L. A. Howland: "Functions of n variables which are functions of r combinations of these variables."

J. I. Tracey: "Covariant curves of the plane rational quintic."

A. B. Coble: "Restricted systems of equations."

L. P. Eisenhart: "Transformations of surfaces of Voss."

H. Galajikian: "A type of non-linear integral equation."

T. H. Gronwall: "On systems of linear total differential equations."

T. H. Gronwall: "Extension of Laurent's theorem to several variables."

T. H. Gronwall: "On approximation by trigonometric sums."

R. D. Beetle: "Cyclic systems of osculating circles of curves on a surface."

G. M. Green: "Canonical systems in projective differential geometry, with special reference to the theory of curved surfaces."

J. H. M. Wedderburn: "A type of primitive algebra."

F. N. COLE,
Secretary

THE AMERICAN SOCIETY OF NATURALISTS

THE thirty-first annual meeting of the American Society of Naturalists was held in the Zoological Laboratory of the University of Pennsylvania on December 31, 1913. In affiliation with the society this year were the American Society of Zoologists, the American Association of Anatomists and the Federation of American Societies for Experimental Biology.

A revised constitution and by-laws was adopted with several important modifications of the old constitution:

1. The former division of the society into an eastern branch and a central branch was abolished. "Sections of the society may be organized in any locality, with the approval of the society in each case, by ten or more members for the purpose of holding meetings for the presentation of scientific papers. Such sections shall have the right to elect their own officers and associate members, but associate membership in any section shall not confer membership in the society.

2. The executive committee is permitted at its discretion to remit for any year the annual assessment of one dollar.

3. The secretary and treasurer are to be elected for terms of three years each. An additional member of the executive committee is to be elected each year to serve for three years.

4. "A committee of three, consisting of the president, vice-president and secretary, shall arrange a program for each meeting."

5. "The records of the society shall be published once every three years, beginning in 1914."

6. "The society shall reimburse the secretary for traveling and hotel expenses incurred in attending the annual meeting."

The following were elected to membership in the society: Irving W. Bailey, Harvard University; Arthur M. Banta, Carnegie Station for Experimental Evolution; Harley H. Bartlett, Bureau of Plant Industry; Charles T. Brues, Harvard University; Philip P. Calvert, University of Pennsylvania; Mintin A. Chrysler, University of Maine; R. A. Gortner, Carnegie Station for Experimental Evolution; Milton J. Greenman, Wistar Institute; Robert W. Hegner, University of Michigan; Lawrence J. Henderson, Harvard University; Merkel H. Jacobs, University of Pennsylvania; G. L. Kite, Henry Phipps Institute; Ralph S. Lillie, Clark University; Clarence E. McClung, University of Pennsylvania; J. H. McGregor, Columbia University; Edward B. Meigs, Wistar Institute; J. Percy Moore, University of Pennsylvania; Alice Robertson, Wellesley College; Edmund W. Sinnott, Harvard University; Arlow B. Stout, New York Botanical Garden; P. W. Whiting, Harvard University.

The program of the morning session was as follows:

"Some Physiological Phases of the Study of Teratological Variations," by J. Arthur Harris.

"Some Physiological Observations Regarding the Genetic Factors for Plumage Patterns," by Raymond Pearl and Alice M. Boring.

"Twin and Triplet Hybrids from Wild Species of *Oenothera* with Segregation in the First Generation," by George F. Atkinson.

"The Functions of an Environment," by Lawrence J. Henderson (by invitation).

"A New Method of Analysis of Fertilization: Results and Theory," by Frank R. Lillie.

"On the Adaptation of *Fundulus* to Abnormal Salt Solutions," by Jacques Loeb. (Read by title.)

"Sex Recognition and Sexual Selection in Vertebrates," by Jacob E. Reighard.